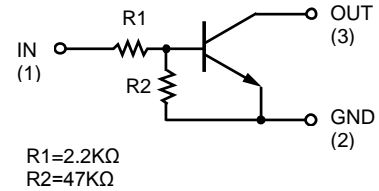


**Feature**

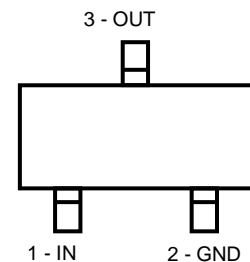
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making the device design easy.


**Applications**

- Inverter
- Interface
- Driver

**Mechanical Characteristics**

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness : ≤3mil



Top View

**Structure**

NPN digital transistor (Built-in resistor type)

**Electrical characteristics per line@25℃ ( unless otherwise specified)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu A$	-	-	0.5	V
	$V_{I(on)}$	$V_O=0.3V, I_O=5mA$	1.1	-	-	V
Output voltage	$V_{O(off)}$	$I_O/I_I=5mA/0.25mA$	-	0.1	0.3	V
Input current	$I_I$	$V_I=5V$	-	-	3.6	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_I=0V$	-	-	0.5	$\mu A$
DC current gain	$G_1$	$V_O=5V, I_O=10mA$	80	-	-	-
Input resistance	$R_1$	-	1.54	2.2	2.86	KΩ
Resistance ration	$R_2/R_1$	-	17	21	26	-
Transition frequency	$f_T$	$V_{CE}=10V, I_E=-5mA, f=100MHz$	-	250	-	MHz

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-5 to +12	V
Output current	$I_o$	100	mA
	$I_{C(MAX.)}$	100	mA
Power dissipation	$P_d$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Typical Characteristics

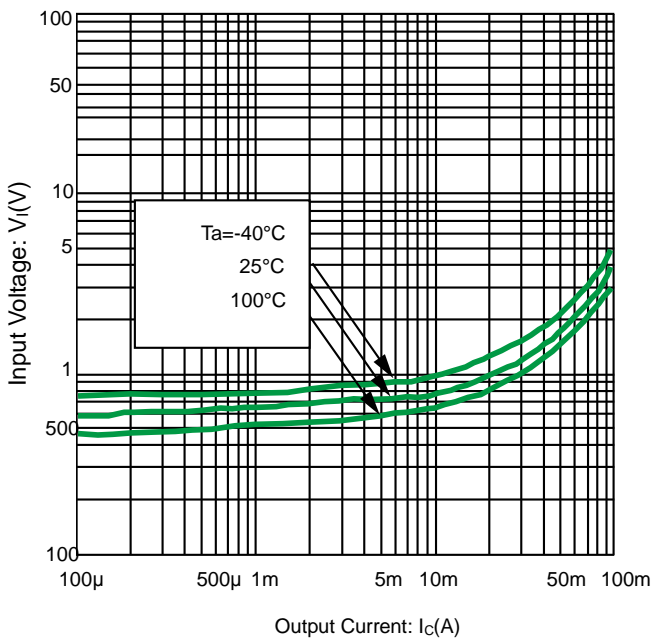


Fig 1.Input Voltage vs. output current  
@  $V_o=0.3V$  (ON characteristics)

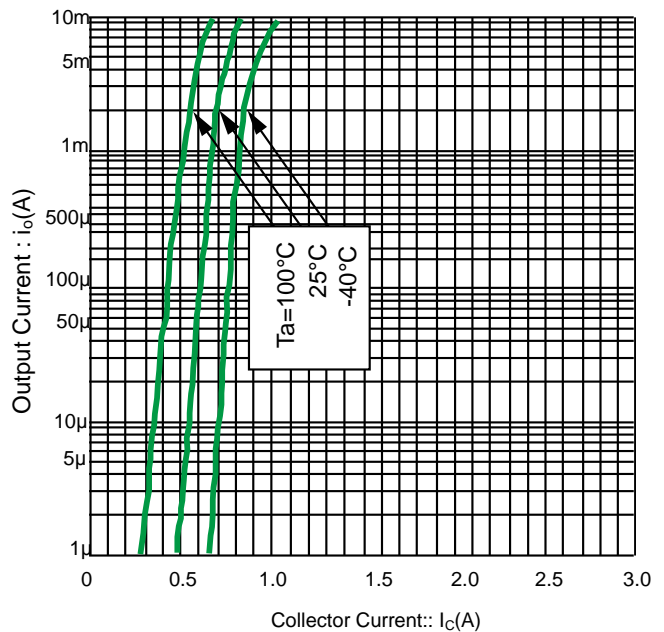


Fig 2.Output current vs. input voltage  
@  $V_{CC}=5V$ (OFF characteristics)

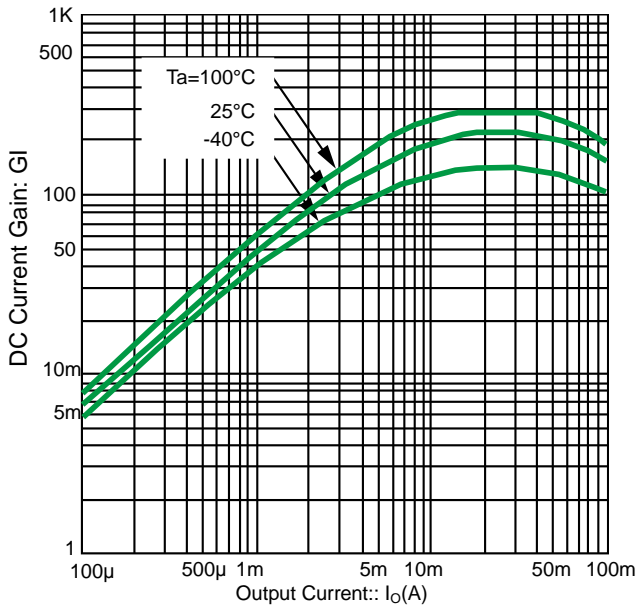


Fig 3. DC current gain vs. output  
@V<sub>O</sub>=5V

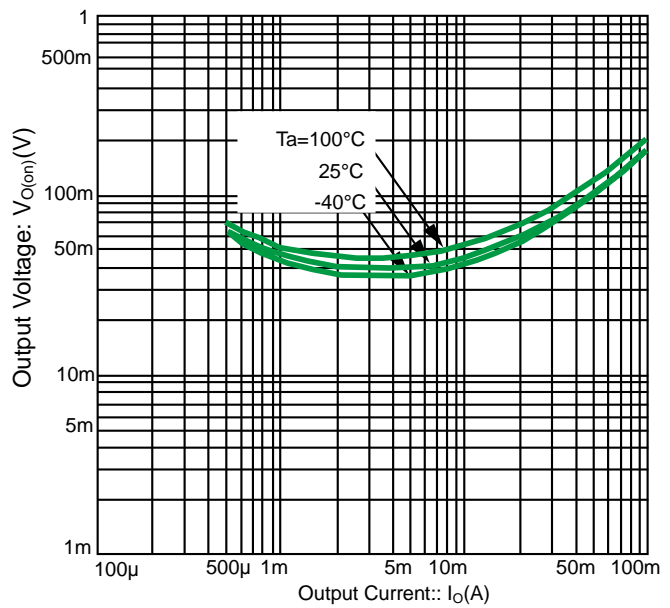
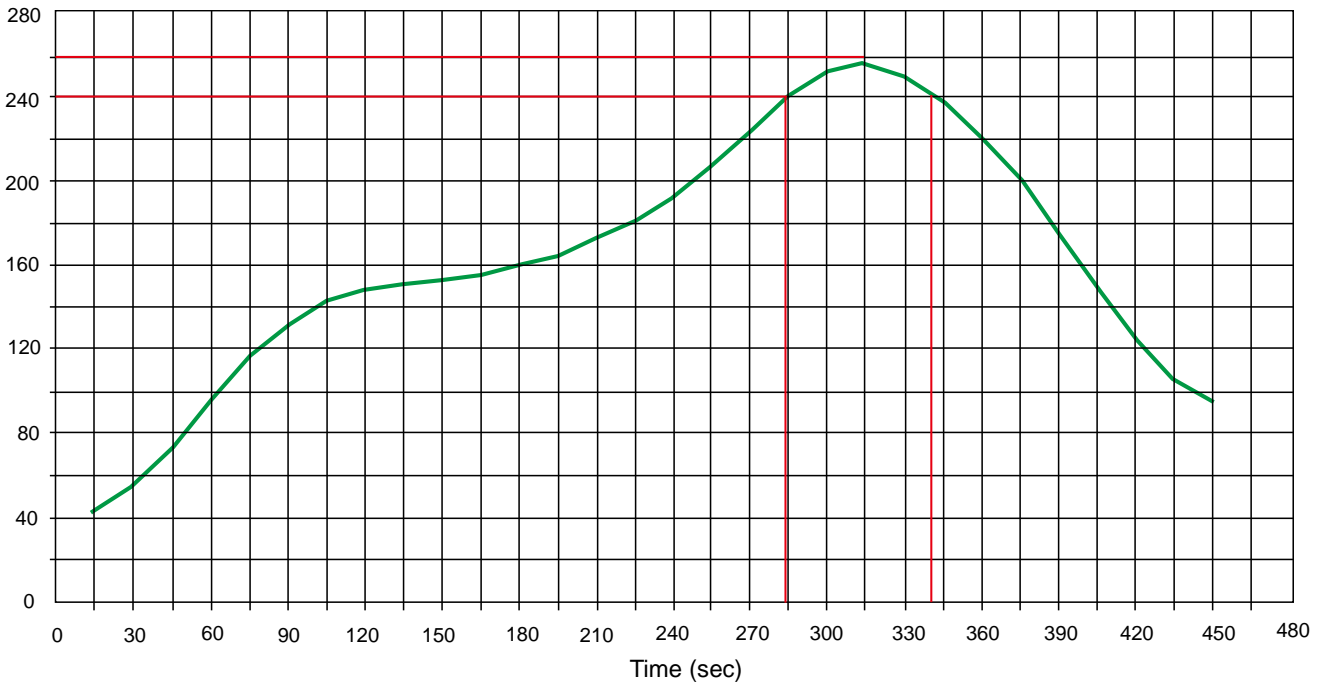


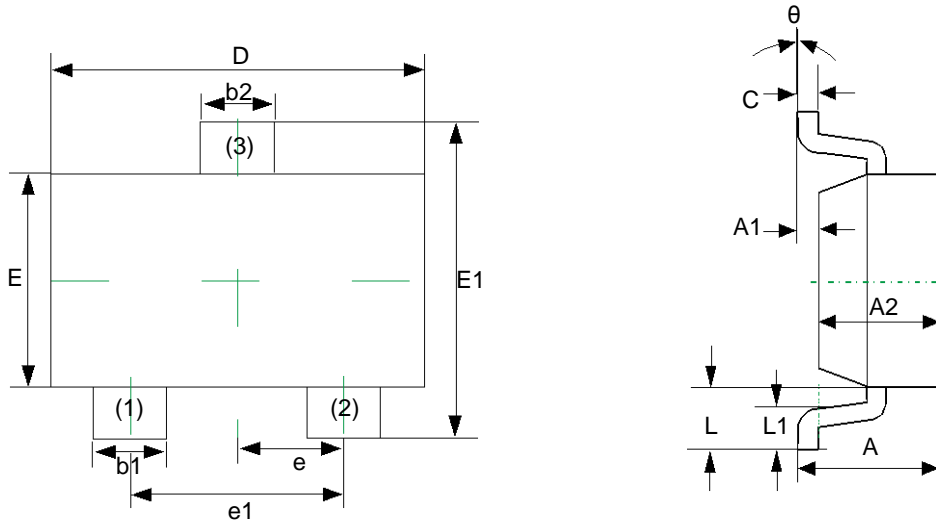
Fig 4. Output voltage vs. output current  
@I<sub>O</sub>/I<sub>1</sub>=5V

Solder Reflow Recommendation

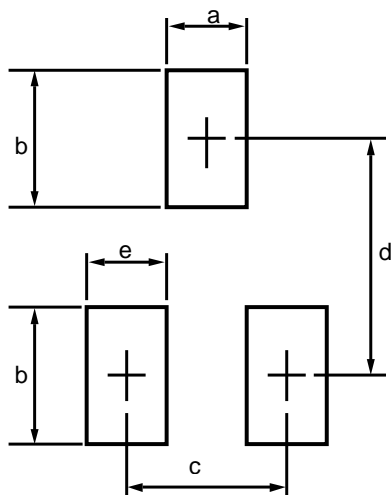
Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



Product dimension (SOT-523)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°




Dim	Millimeters	
	MIN	MAX
a	--	0.5
b	--	0.6
c	--	1.0
d	--	1.24
e	--	0.4

**Ordering information**

Device	Package	Shipping
PDTC123JE	SOT-523 (Pb-Free)	3000 / Tape & Reel


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